



# Delta Independent Science Board

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February 16, 2016

To: Delta Stewardship Council

From: Delta Independent Science Board

Re: Review of the Process for Refining and Updating Delta Plan  
Performance Measures

## Summary

The Delta Stewardship Council staff has begun to refine and update performance measures for assessing outputs and outcomes of the Delta Plan. The staff asked the Delta Independent Science Board to review its approach to this task. We applaud the staff's diligence in building on appropriate precedents and incorporating external guidance. We recommend clarifying the criteria for selecting metrics, adding steps for independent review, and including criteria for stability and consistency over space and time. The large effort required for improving performance metrics for such a complex and multifaceted plan, with its diverse and sometimes conflicting objectives, is likely to yield broad gains in management of natural resources. We also expect that the proposed process will advance Delta science by generating interest in the details of how performance measures are evaluated and selected, and how these metrics get used.

## Background

The Delta Reform Act of 2009 directs the Delta Stewardship Council (Council) to include performance measures in the Delta Plan. Accordingly, the Delta Plan of 2013 "contains performance measures developed to monitor performance of Delta Plan policies and recommendations." The Plan anticipates that these performance measures "will be periodically reviewed by independent expert panels and will be sent to the Delta Independent Science Board (Delta ISB) for further review and comment" (2013 Delta Plan, p. 45).

The Delta ISB was recently asked to review the ongoing process for refining and updating output and outcome performance measures of the Delta Plan. The request was made at the December 10, 2015 Delta ISB meeting by Cindy Messer, then the Council's Deputy Executive Officer for the Planning Division. Ms. Messer outlined the process and we agreed to provide comments by mid-February 2016. Ms. Messer specifically asked the Delta ISB to review only the process - not the performance measures themselves - for refining and updating two of the three kinds of performance measures in the 2013 Delta Plan. The Plan contains 160 performance measures across three categories: 118 "administrative," 21 "output," and 21 "outcome." Output measures track results of administrative actions, and the outcome measures track the impact of those actions. Ms. Messer requested that we review only the

proposed approach for updating and refining the output and outcome measures. As written guidance for the review, Council staff provided the Delta ISB its "[Report to the Delta Independent Science Board: Process for refinement and update of Delta Plan performance measures](#)" for the January 15, 2016, Delta ISB teleconference meeting. At the February 11, 2016, Delta ISB meeting, we received [additional information](#) from Council staff using the proposed sub-measure, Restoring Functional Flows, as an example of how the process is being used in the evaluation and selection of performance measures.

It is our understanding that Council staff seeks Delta ISB review and comment in three areas:

1. Whether appropriate methods have been proposed for updating and refining the performance measures;
2. Whether the proposed process is headed in directions consistent with current scientific knowledge and available monitoring activities and capabilities; and
3. What general recommendations we might offer to assist in making the output and outcome measures more informative and measurable.

### **Support for the process**

Overall, the process is likely to provide useful performance measures and metrics that will improve on those currently in the 2013 Delta Plan.

The process is thorough. The Delta Plan already contains a large and diverse set of performance measures to track progress toward the Plan's goals. The Delta ISB is confident that if the expected refinements and updating receive the in-depth and thorough analysis promised, the resulting performance measures should serve their intended purpose.

The process builds on thoughtful precedents. It is based in large part on prior, well-documented efforts involving use of similar performance measures, including the planning, development and reporting methods. The process adapts these precedents by aligning performance measures with the particular needs and circumstances of the Delta Plan.

The process emphasizes learning. It began with ten pilot performance measures selected for a proof-of-concept analysis. The revisions were vetted by regional implementing agencies for consistency with their missions and goals. The vetting process included consultation with additional experts, both internal and external to government agencies holding stakes in the Delta. Additional expertise was sought through internal consultation with the Delta Science Program.

Finally, the proposed process lays foundations for sustaining the Delta Plan. As anticipated by the Plan's writers, updating and refinement will be needed for performance measures that serve a plan this comprehensive, for managing resources so contested and changing. Iterative improvements in performance measures will be needed to support policy and management under the Delta Plan.

## **Suggested improvements to the process**

Our main concerns are less with the process than with its implementation, as discussed below under “General Considerations”. Our suggestions and comments on the proposed process itself are mostly minor:

- *Explain more fully the criteria for selecting and assessing the metrics, and document how the criteria were applied in the selection of each metric.* Many of the screening criteria listed in Figure 3 are not self-explanatory. Some are quantitative (spatial scaling) but without discussion of what is acceptable. How would the various criteria be used? What do “process” and “staff notes” signify when they are listed as “criteria”? The criteria in Figure 3 seem to be key to the overall process, so more information about them would be helpful. Finally, documentation is needed that describes how each metric was evaluated and selected.
- *Aim for metrics that are stable and consistent.* The text suggests in several places that the performance measures should be adaptively changed as circumstances change. But the report should explain that a performance *measure* (item being measured) differs from a performance *metric* (the quantitative measure). To detect responses to management or trends in system conditions (i.e., outcomes), it is essential that the metrics are stable and consistent through time and space; otherwise it will be difficult to determine whether an observed change is due to a real change in the system or a change in the metrics.
- *Say more about the reviews from subject experts.* How were the 65 subject experts selected and how many responded? Outsiders’ confidence in the process could be increased by overviews and examples of how the input mentioned on pages 11-12 was used. In addition, because there were undoubtedly divergent opinions of subject experts, introducing uncertainty to the process, it is recommended that major differences of opinion be documented.
- *Clarify the status of the metrics.* Which metrics have been selected already? Are they the ones in the tables at <http://deltacouncil.ca.gov/event-detail/12801>? The staff report cited above says that work has progressed through step 3.3. More could be said about how or if the metrics will be further refined.
- *Obtain independent review of draft updates and refinements before implementation.* This review would take place late in step 3 (‘Refine’) of the process on page 4 of the February 11, 2016 [presentation](#). Materials reviewed could be posted online, and comments and responses could be posted there as well. This extra effort would likely strengthen the content and effectiveness of the Delta Plan.
- *Similarly, obtain independent review of the performance appraisal results and reporting.* This review would take place during step 5 (‘Report and Manage’) of the process on page 4 of the February 11, 2016 [presentation](#). The review would promote confidence in the assessment. The resulting comments and responses should be presented online to foster openness and transparency.

## **General Considerations**

No less important than the proposed process are the measures and metrics that will result from it. Several thoughts about those next steps:

- The outcome measures are most relevant to the goals and objectives of the Delta Plan, yet may also be the most difficult to assess. The goal of habitat restoration, for instance, is to create suitable conditions for the persistence and flourishing of target species or ecological processes (a measure of outcome). A restoration plan sets out what is to be done, which is then assessed by measures of administrative performance. Implementation of the plan may result in some number of acres restored (a measure of output). But all of this is for naught if the desired outcomes do not follow, and these outcomes can be far more difficult to measure, particularly if a causal connection to the plan action is muddled by other external factors, such as new non-native species or a drought.
- An outcome may be a nonlinear function of what is measured by the output. For example, restoring acres of habitat may produce no ecological response until some threshold value is reached or passed—that is, when the restored area is large enough for the processes to occur.
- Figure 3 in the [report](#) discussed during the Delta ISB meeting on January 15, 2016, appropriately notes the need to consider temporal and spatial scales. But scale-dependence is a thorny issue. It is determined by a complex intersection of the scales on which the system and its dynamics are operating (which differs for different components of the system) and the scales of management, decision-making, and policy (which also differ for different objectives).
- Performance measures provide an opportunity to integrate performance of the Delta Plan with the process of adaptive management and ongoing efforts of agencies to evaluate their progress toward goals. Thought should be given to coordinating and linking these efforts.
- Statistical analyses will be essential in many of the performance measures. Careful statistical design is needed to tell whether a change in a variable is a response to management actions or to other changed environmental conditions (which likely will become a more prevalent problem with climate change) or endogenous developments (such as internal population dynamics), and to assess the power of inference, which tells one whether a numerical change in a metric really indicates a significant change in the variable of interest.

## Conclusions

The expected revision and updating of performance measures will require complementary efforts in policy and management arenas. The Delta Stewardship Council itself is likely to wrestle with insights that these measures provide. However, if done well, this process also will provide an impetus for greater involvement and ownership of performance assessment and reporting, across agencies and interests.

In relying on performance metrics, the Council is undertaking an innovative effort that is both scientifically and institutionally difficult, but which is also essential to success of the Delta Plan and adaptive management. The process described to us is a good one overall, but the proof of this pudding will be in the eating.